

Rubidium Frequency Reference

- Low Phase Noise
- Ageing $<5 \times 10^{-10}$ /year
- High Precision Atomic Clock

A7-MX using A10-MX as reference



The Quartzlock A10-M rubidium frequency reference is a 10 MHz, high-stability Rubidium frequency standard with flexible output options and very low cost of ownership primarily for production test of quartz oscillators and RF instrumentation frequency referencing. The A10-MX incorporates the latest high stability and low drift designs. It may also have both 5MHz and 10MHz outputs presented on the front panel to align with A7-MX Signal Stability Analyzer reference input.

Features

- Multiple Output options
- 3 year Warranty
- Custom Frequency outputs
- Low Noise Floor
- Front panel outputs (A10-MX)
- Exceptionally low drift/ageing and high stability per hour/day

Benefits

- Stability to $8 \times 10^{-14}/s$ @ 5MHz
- 10MHz Standard Output
- 1-40MHz optional
- 100MHz option (-180dBc/Hz NF)
- 5MHz option (-123dBc/Hz@1Hz)
- The A10-M can accommodate many options including customized requirements.

Applications

- Frequency Calibration
- Telecom Network Synchronisation
- Broadcast-Radio & TV & Satellite Communications
- HDTV
- Production Test Reference for instrumentation
- Microwave Test Bench or Test Solution

Specification

| | | | | | |
|---|--|---------------------|-----------------------------|------------------------------|-----------------------------|
| Output | 10MHz, +7dBm into 50Ω, 0.5VRMS -see options | | | | |
| Adjustment | | | | | |
| Mechanical Range | 2x10 ⁻⁹ min | | | | |
| Electrical Range | 2x10 ⁻⁹ min | | | | |
| Control Voltage | 0 ~ 5V | | | | |
| Factory Setting | ±5x10 ⁻¹¹ | | | | |
| Frequency Stability typical | A10-M | A10-MX | | | |
| | STD | LN | ULN¹ 5MHz | ULN² 10MHz | ULN³ 5MHz |
| 1s | 3x10 ⁻¹² | 2x10 ⁻¹² | 5x10 ⁻¹³ | 1–30s from | 1s 8x10 ⁻¹⁴ |
| 10s | 2x10 ⁻¹² | 5x10 ⁻¹² | 2x10 ⁻¹³ | 1x10 ⁻¹³ to | 3 to 30s |
| 100s | 8x10 ⁻¹³ | 4x10 ⁻¹³ | 4x10 ⁻¹³ | 2.5x10 ⁻¹³ | 1.3x10 ⁻¹³ |
| Aging | | | | | |
| 1 day | 3x10 ⁻¹² | 1x10 ⁻¹² | 5x10 ⁻¹² | 5x10 ⁻¹² | 5x10 ⁻¹² |
| 1 month | 4x10 ⁻¹¹ | 4x10 ⁻¹¹ | 4x10 ⁻¹¹ | 4x10 ⁻¹¹ | 4x10 ⁻¹¹ |
| 1 year | 5x10 ⁻¹⁰ | 4x10 ⁻¹⁰ | 4x10 ⁻¹⁰ | 4x10 ⁻¹⁰ | 4x10 ⁻¹⁰ |
| Phase Noise dBc/Hz in 1Hz BW | STD | LN | ULN¹ 5MHz | ULN² 10MHz | ULN³ 5MHz |
| 1Hz | -90 | -110 | -123 | -122 | -123 |
| 10Hz | -120 | -139 | -148 | -137 | -140 |
| 100Hz | -135 | -152 | -158 | -143 | -145 |
| 1kHz | -145 | -154 | -165 | -145 | -150 |
| 10kHz | -150 | -154 | -168 | -145 | -155 |
| Harmonics | <30dBc | <30dBc | <40dBc | <40dBc | <40dBc |
| Spurious | <80dBc | <80dBc | <80dBc | <70dBc | <70dBc |
| Warm time to 1x10⁻⁹ | 5 minutes | | | | |
| Retrace after 24h off & 1h on, same temp | <3x10 ⁻¹¹ | | | | |
| Power Supply Power at steady state at 25°C | 90 245V ac Battery Back Up option 13W @ 24V (22~30Vdc) @ 25°C, Max 2A | | | | |
| Freq offset over output voltage range | <2x10 ⁻¹¹ | | | | |
| Temperature | | | | | |
| Operating | -20°C ~ +50°C | | | | |
| Storage | -40°C ~ +70°C | | | | |
| Freq offset over operating temperature range | <3x10 ⁻¹⁰ | | | | |
| Magnetic Field | | | | | |
| Sensitivity | <2x10 ⁻¹¹ /Gauss | | | | |
| Atmospheric Pressure | -60m ~ 4000m <1x10 ⁻¹³ /mbar | | | | |
| Approx MTBF, Stationary | Approx MTBF, Stationary | | | | |
| Mechanical | 88mm (3.5") 2U x 19" rack mounted | | | | |
| Option | Calibrator outputs can be provided additionally as options. Sinewave +13dBm 50 Ohm 1Vrms Output frequencies:1MHz, 5MHz, 10MHz, 100MHz, 1GHz | | | | |

Options

- Multiple Outputs
- 1 40MHz Output Frequency
- Ultra Low Noise 50 100MHz Outputs (-180dBc Noise Floor)
- 24V dc Battery Back-up Input

A10-MX Uses Quartzlock DPPL-DDS Clean Up Loop Technology

Please contact Quartzlock about your application. We can help you choose the most cost effective low noise solution.

The Quartzlock A10-M or A10-MX find applications in standards laboratories, as low noise frequency references and as calibrators.